

Host: Harry can you give us some background information on where in the shuttle processing system inorganic zinc is used?

Harry: Yes, first of all let me say that Kennedy Space Center is classified as being located in one of the most corrosive environments in the world. Not just the United States, but in the world. With our seaside launch structure, the acid residue that is left over after launch and our Florida weather all contribute to corrosion. Inorganic Zinc is considered a cathodic protection for A36 steel which is primarily what is used in our launch structures and various ground service equipment. The inorganic zinc is used as prime coat each time facilities have to be refurbished. Inorganic zinc is used in a considerable amount of areas within the Kennedy Space Center as a prime coat to guard against corrosion.

Host: How did you come to find this problem with the disposal?

Harry: Let me say that zinc is classified as a hazardous waste when it can no longer be used on the structure. During times of inclement weather and whatever else may determine that the material can no longer be used as coating then it is classified as hazardous waste per standards set for by the environmental protection agency and the Florida Department of Environmental Protection. Once it has become classified as hazardous waste we are required to move it to a 90 day storage site and it has to be (by law) contained in a closed sealed storage container. If zinc is not allowed to go through its process of curing, there is a lot of off-gassing still occurring and when you enclose it in a container with a sealed top you are in effect creating a chemical bomb. If you read on all the material data sheets of all the manufactures of inorganic zinc it strictly advises and prohibits storing uncured zinc in a closed container. But by law as set forth by the EPA and the FDEP before it can be placed in 90 day storage container it has to be seal in a closed top container and this is what causes our problem with the swelling drums and the possibility of an explosion.

Host: In the process of preparing the launch platforms and launch towers for launch you are using this inorganic zinc to protect them?

Harry: The zinc provides a cathodic protection of the carbon steel and we have also learned that the zinc is compromised by the acids that are produced by the solid rocket exhaust so on top of the inorganic zinc there is an inorganic top coat, but the inorganic top coat that we use does not in any way cause harm when they have to be sealed in a

closed top container it is only the inorganic zinc products that cause the problem with off gassing.

Host: Tell me about working with the Florida Department of Environmental Protection, how was that?

Harry: They understood our problem; however they had certain laws and guidelines that they had to adhere to. When we explained that we had a problem with OSHA in the fact that we had an identified hazard in our workplace that had to be addressed, actually that is what the permit allows us to do, to take the waste and turn it into a non-hazardous material and dispose of it in that way so it is unprecedented in what they worked with us to do.

Host: Is there anything else that you would like to say about working with the Shuttle System, the disposal of the waste or how you came to pull this project together?

Harry: We need to understand this was a process that needed to take place. It is a process that I strongly suggest that other organizations, other Centers consider adopting because of the danger of this zinc waste if it is not allowed to do its off gassing and be rendered safe before it is considered hazardous waste. One thing I would like to mention is that we are taking this a step further and we are in the process now of looking for a processor of this zinc waste. This permit allows us to do what we do, it is no longer considered hazardous waste, we feel there is a market for it to be recycled into other zinc products. We are looking for a company that may be interested in taking our zinc waste and recycling it and we would reduce our waste output even more.

Host: You said that typically storing zinc in small quantities is not a problem, is that correct?

Harry: Storing zinc in small quantities is not as much of a danger as long as it is in large enough vessel to where you can contain the off gassing. If you were to take a gallon of hazardous zinc waste and place it in a gallon container, yes you would have a problem. If you put it in a 55 gallon drum, you would not have a problem, you would have enough freeboard to absorb the amount of off gassing that happens. As large generators as we are, during times of major corrosion control refurbishment efforts,

putting as much as 30 gallons a day inside a drum is when the problem occurs. When you don't have the freeboard within the 55 gallon container to contain that amount of off gassing, that is where the hazard comes into play.

Host: Thank you Harry, this has been a very informative discussion.